Ordering number : EN7200



SANYO Semiconductors
DATA SHEET

2SD1710C — NPN Triple Diffused Planar Silicon Transistor
500V / 7A Switching Regulator Applications

Features

- High breakdown voltage, high reliability.
- Fast switching speed.
- Wide ASO.
- Adoption of MBIT process.
- Micaless package facilitating mounting.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		900	V
Collector-to-Emitter Voltage	V_{CEO}		500	V
Emitter-to-Base Voltage	V_{EBO}		7	V
Collector Current	I_C		7	A
Collector Current (Pulse)	I_{CP}	PW≤300μs, duty cycle≤10%	14	A
Base Current	I_B		3	A
Collector Dissipation	P_C		3	W
		Tc=25°C	45	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=500V, I_E=0A			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0A			10	μA

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SANYO Semiconductor Co., Ltd.
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

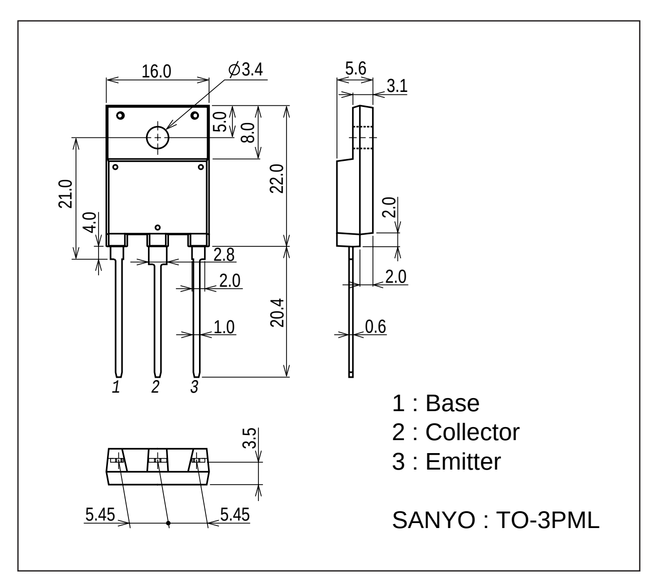
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.6A	20		50	
	$h_{FE}2$	V_{CE}=5V, I_C=3A	8			
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=0.6A		18		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		80		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=3A, I_B=0.6A			1	V
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=3A, I_B=0.6A			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=1mA, I_E=0A	900			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=5mA, R_{BE}=∞	500			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=1mA, I_C=0A	7			V
Collector-to-Emitter Sustain Voltage	V_{CEX}(sus)	I_C=2.5A, I_{B1}=−I_{B2}=1A, L=1mH, Clamped	500			V
Turn-ON Time	t_{on}	V_{CC}=200V, 5I_{B1}=−2.5I_{B2}=I_C=4A, R_L=50Ω			0.5	μs
Storage Time	t_{stg}	V_{CC}=200V, 5I_{B1}=−2.5I_{B2}=I_C=4A, R_L=50Ω			3.0	μs
Fall Time	t_f	V_{CC}=200V, 5I_{B1}=−2.5I_{B2}=I_C=4A, R_L=50Ω			0.3	μs

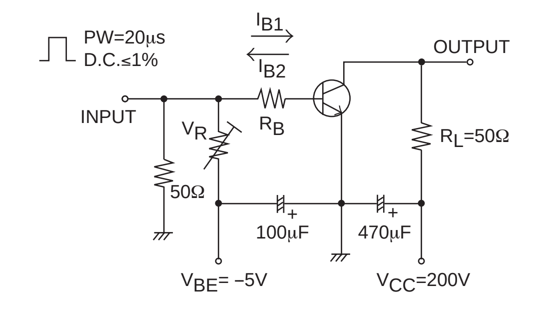
Package Dimensions

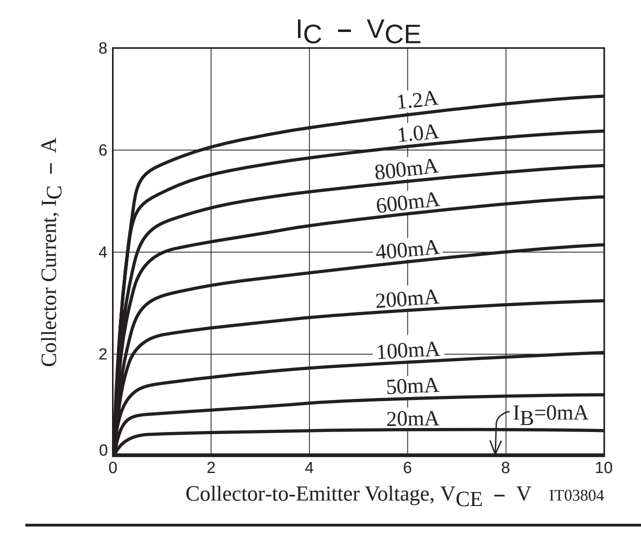
unit : mm (typ)

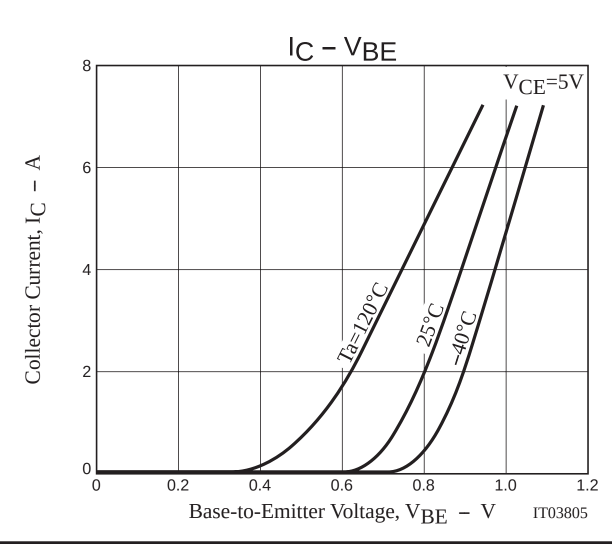
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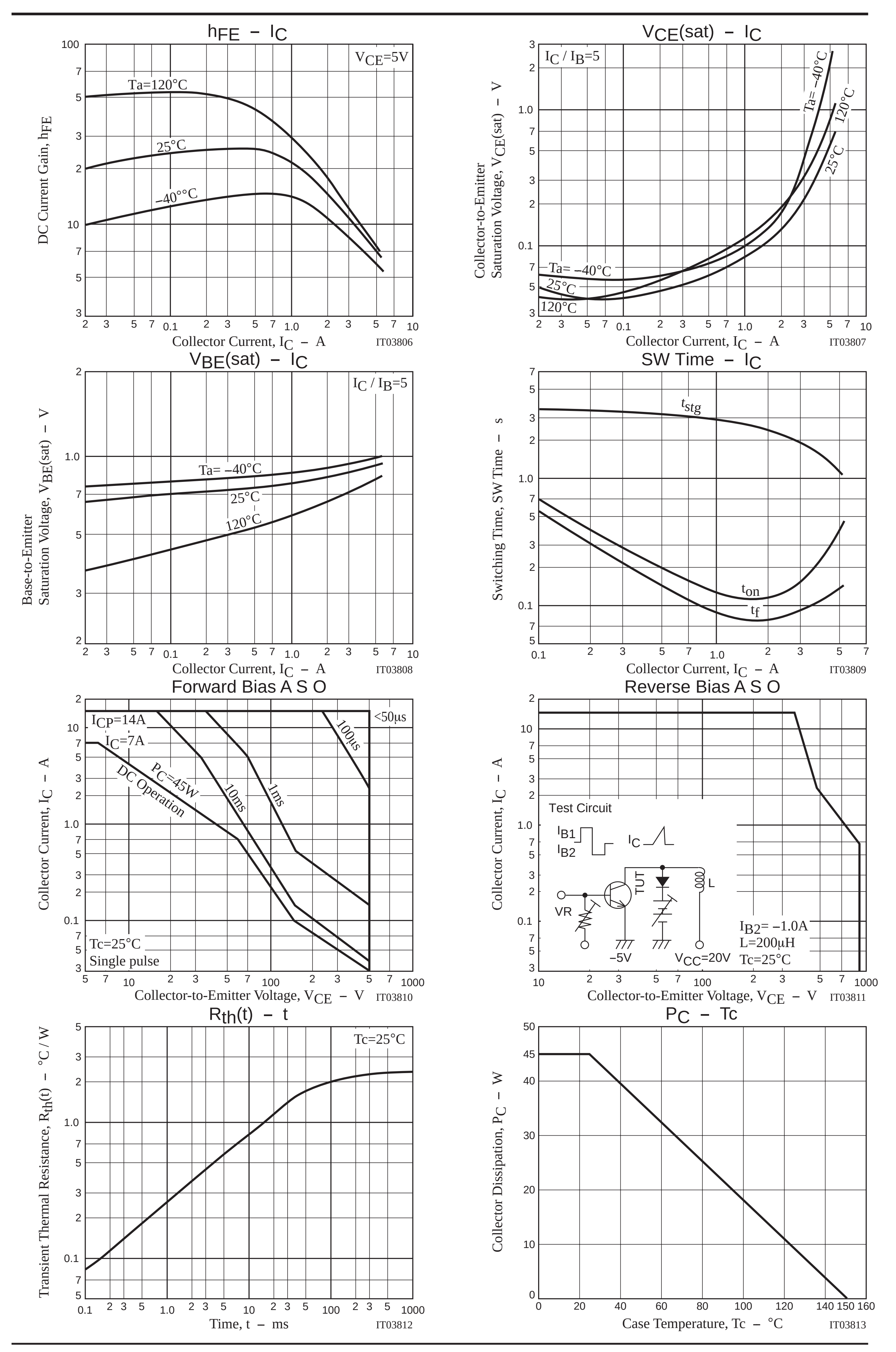


Switching Time Test Circuit









hFE – IC
VCE=5V
Ta=120°C
25°C
–40°°C
DC Current Gain, hFE
Collector Current, IC – A
IT03806
VCE(sat) – IC
IC / IB=5
Ta= –40°C
120°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT03807
VBE(sat) – IC
IC / IB=5
Ta= –40°C
25°C
120°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT03808
SW Time – IC
tstg
ton
tf
Switching Time, SW Time – s
Collector Current, IC – A
IT03809
Forward Bias A S O
ICP=14A
IC=7A
<50μs
100μs
PC=45W
DC Operation
10ms
1ms
Tc=25°C
Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT03810
Reverse Bias A S O
Test Circuit
IB1
IB2
IC
TUT
L
VR
–5V
VCC=20V
IB2= –1.0A
L=200μH
Tc=25°C
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT03811
Rth(t) – t
Tc=25°C
Transient Thermal Resistance, Rth(t) – °C / W
Time, t – ms
IT03812
PC – Tc
Collector Dissipation, PC – W
Case Temperature, Tc – °C
IT03813

This catalog provides information as of February, 2008. Specifications and information herein are subject to change without notice.